

6

ANNUAL REPORT

OF THE

PRESIDENT AND MANAGERS

OF

THE UNION CANAL COMPANY

OF

PENNSYLVANIA,

TO

THE STOCKHOLDERS.

November 15, 1825.

PHILADELPHIA:

PRINTED BY LYDIA R. BAILEY,

NO. 10, NORTH ALLEY.

1825.

Digitized by the Internet Archive
in 2017 with funding from

This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

REPORT.

At the Annual Meeting of the Stockholders of the Union Canal Company of Pennsylvania, held on the 15th of November, 1825, the following Report was presented by the President and Managers:—

THE President and Managers of the UNION CANAL COMPANY OF PENNSYLVANIA, submit the following report to the Stockholders:—

At no period since the organization of the Union Canal Company of Pennsylvania, have the president and managers been able to lay before the stockholders, a view of their affairs so satisfactory, as that which they now proceed to exhibit.

In order to place more distinctly before them, the present situation of the whole line, extending from the Schuylkill to the Susquehanna, the two divisions of East and West, having the borough of Lebanon for the centre, will be considered separately.

EASTERN SECTION.

This division commences one mile east of Lebanon, and passing over two miles and three-fourths of the summit level, extends thirty-four and a half miles to the mouth of the Tulpehocken; thence about three miles along the western bank of the Schuylkill, making the whole distance about forty miles. Connected with the afore-mentioned portion of the summit, there are two

capacious reservoirs, secured by strong dams and suitable feeders, which, in union with three other feeders, from constant springs, supply the summit in part with water. Below this summit, to the east, the Tulpehocken becomes the great feeder of the thirty-four and a half miles, which extend to the Schuylkill. At the termination of this part of the canal, which is just above the Reading bridge, an outlet lock is placed, which discharges into the Schuylkill. But as the works of the Schuylkill Navigation Company are not here connected with the river, it is proposed, in order to make the junction of the two works as perfect as possible, to erect a dam upon the river, and continue the canal about two miles below, so as to discharge into deep and still water, in a sheltered situation. This plan must of course be more expensive than a junction at a higher point; but its advantages will more than compensate such expense; for by its execution, the borough of Reading will obtain an excellent harbour, and easy means of using the canal; it will obviate the necessity of twice crossing the Schuylkill, in bleak and exposed situations; and in conjunction with the Girard canal, of twenty-two miles, to which it leads, will ultimately render the line almost one continued canal, from the Susquehanna to within thirty miles of Philadelphia.

The work in front of Reading, although in progress, is yet unfinished. It is, however, the only part of the whole distance from Lebanon that remains materially incomplete, and will undoubtedly be perfected next spring, and thus offer to the public, in conjunction with the Schuylkill Navigation, an uninterrupted slack-water navigation from Philadelphia, through the populous

counties of Montgomery, Chester, and Berks, to the centre of the rich county of Lebanon, being a distance of about 110 miles from the city, passing along streams whose banks produce the most valuable minerals, in a degree and variety not surpassed in any district in the world, of equal extent: in proof of which, the board may be permitted to enumerate *iron, coal, lead, zinc, marble* of great beauty and various kinds, many sorts of *lime stone*, including that with which hydraulic or Roman cement is made, *soap stone, sand stone*, for ornamental buildings, *granite* for flag pavements and curb-stones.

In the progress of the work on the eastern section, 524,979 dolls. 93 cts. have been expended, for excavations, embankments, walls, 278½ feet of lockage, reservoirs, dams, feeders, bridges, aqueducts, culverts, guardlocks, and waste-wiers. By which it will be seen, that the whole cost of this section will not vary much from 13,000 dollars per mile; which must be considered as very moderate, when it is recollected that the immense labour executed on the summit is included in this computation.

The number of locks on this section is fifty-three, of various lifts, the average cost of which, per foot, was 650 dollars.

In the construction of many of the locks, the hydraulic cement, discovered along the line last year, by Mr. Guilford, has been very successfully used; and as arrangements have been made for all which will be required for the balance of the mason work, a solidity will be given to it, which cannot be expected from the partial use of cement in the face of the lock, and com-

mon lime in the backing. This valuable cement being in the immediate neighbourhood of the canal, must soon become an object of commerce, particularly as mills have been erected to prepare it for use, on the spot or elsewhere.

WESTERN SECTION.

During the latter part of the last autumn, the engineer examined the ground west of Lebanon, comprising the valley of the Quittapahilla, the banks of the Swatara to its junction with the Susquehanna, and a large extent of the adjacent country. This examination resulted in a conviction, that the valley of the Quittapahilla presented many difficulties, which were of so formidable a character as to leave no doubt of the propriety of seeking for some other route. This valley was found to be composed of a substratum of lime stone, abounding in fissures, slightly covered in general with soil, so that the formation of the canal must have disfigured a great extent of the surrounding surface, by the removal of the earth; whilst the treacherous character of the lime stone must have rendered the permanence of the work more doubtful than upon any part of the line already made. The interference with, or destruction of, valuable mills and other hydraulic works, also, would have been indispensable, and was to be avoided if possible.

The engineer, taking these difficulties into consideration, set about exploring another route, which he happily discovered, and describes as follows:—

“The new line will pass along the foot of a slate and gravelly loam hill, to Snaveley’s farm; then through a

slate rock, by a tunnel, to the valley of Clarke's creek, and to Swatara creek, where it is proposed to bring in a navigable feeder from near Weidman's forge. From the mouth of Clarke's creek, the canal will be continued along the valley of the Swatara, until it connects with the old route. By the present survey, the distance will be increased about three miles, and the estimated expense is something more than that of the Quittapahilla route. The damages have not been estimated; but if ascertained, would undoubtedly be sufficient to give a considerable balance in favour of the tunnel route. A considerable extent of lime stone country will be avoided, and thereby the difficulties incident to that kind of rock and soil; an additional supply of water may be obtained for the summit level, which may be considered ample, from the Swatara creek; an increase of trade to a considerable amount may be anticipated, in consequence of the proximity of the navigable feeder to the coal mines; also from the lumber, which abounds at the head of the Swatara. All interference with mills, water-rights, &c. which are numerous on the Quittapahilla, will be avoided."

The board, in consequence of this representation, adopted Mr. White's new plan, on the 5th of January last; and in pursuance thereof, have extended the summit about five miles, which, wholly avoiding the lime stone country, reaches the valley of Clarke's creek, and following the course stated in the engineer's letter, crosses the Swatara by an aqueduct, and continues along the western side of that river to the Susquehanna. The navigable feeder from the mouth of Clarke's creek, extends about seven miles up the Swatara, near to the

foot of the Blue Ridge. The extended summit, together with the part before excavated, will receive, by machinery, a supply of water from the Swatara, in addition to that heretofore provided by reservoirs and feeders, of one hundred locks full per day, which supply being susceptible of great increase, must tranquilize every apprehension on this important point, since these one hundred locks full, together with the water furnished from the reservoirs, &c. are considered to be fully competent to the passage of all the boats, in times of the briskest trade. But in order to execute this extension of the summit, a tunnel was required to be bored through the dividing ridge of the waters of the Quittapahilla and Clarke's creek, of 286 yards in length; the whole of the deep cutting, up to the southern entrance of which, is completed, and the boring is progressing. The contractor, Mr. John B. Ives, has the fullest confidence in the safety of the work, and of its completion within the stipulated period of the 1st of next August.

It may not be amiss to add to what has already been said in relation to this new route, that the soil down the valley of Clarke's creek is of a tenacious quality, and will retain water without puddling; and that the fall at the termination of the Swatara feeder is of thirty-five feet, being the power by which the new supply of water, just alluded to, is to be furnished to the summit.

On this *Western Section* of the line, all the excavation, embankment, and protecting walls, from the west end of the old summit, to within a mile of the mouth of the Swatara at Middletown, and comprising seventy-four half-mile sections, were, at different periods during the present year, placed under contract, to be completed by the 1st of October, 1826.

Ten of these sections have been finally reported upon, and the remaining sixty-four may upon an average, be considered as one-third finished; for although some of them are untouched, others are so near completion, that the contractors will be shortly turned over to the new work, which they have undertaken.

Of the thirty-seven locks to be finished on this western division by the close of 1826, the mason work of ten is complete; considerable progress has been made in the carpenters' work, and the materials for the others, are rapidly collecting. The plan for the remaining mile of canal and locks at the mouth of the Swatara, requiring some further consideration on the part of Mr. White, our engineer, they have not been placed under contract, but this will be done in time to meet the other work.

Of the thirteen sections on the Swatara navigable feeder already under contract, three are completed, and the other ten will be finished by the month of June next. Negotiations are now going on with contractors for the erection of the dam at the head of the feeder; the aqueduct over the Swatara, and the bridges; all to be completed early next year. Plans and arrangements are in progress for the little feeder to run from the mouth of Clarke's creek to the summit. In fine, sanguine hopes are entertained that boats may pass from the Susquehanna to the Schuylkill by the close of the year 1826.

Damages to the amount of 12,428 dols. 83 cts. have been already paid, and other applications are made on the subject, which are settled, whenever the demands are reasonable; such a course, besides being equitable, will contribute, it is believed, to the best interests of the company.

Mr. White's estimate for the construction of the *western section*, in the accuracy of which the board have the fullest confidence, is nearly 550,000 dollars ; and as the capital heretofore raised was never supposed to be large enough to finish a work which Mr. Weston, the English engineer, said could not be executed under one million two hundred thousand dollars, exclusive of the navigable feeder of seven miles in length, it became necessary to devise some plan for raising the additional sum, in order to proceed with this division of the work.

A plan to borrow five hundred and fifty thousand dollars, a copy of which is annexed, was offered to the public in March last, in order to obtain the sum of two hundred thousand dollars, as part thereof, which was wanted for present use, and was subscribed and paid at a premium of four per cent. on the obligation of the company to pay therefor six per cent. per annum. It is expected that about one half of the loan will eventually be converted into stock, and the residue redeemed from the avails of the lotteries : the old lottery fund, and the income from tolls, being pledged for the payment of the interest.

As to the probable income of the canal, when complete, the board refers to a table hereto annexed, by which it will be seen that the receipts at two cents per ton per mile, for seventy-four miles of distance from the Susquehanna to the Schuylkill, and two hundred and forty days of navigation per annum, with boats of twenty tons each, and but the very moderate number of ten boats passing daily each way, will equal, if not surpass the expectations of the most sanguine friends of inland navigation.

One hundred boats being the greatest amount mentioned in the table, can be passed by the quantity of water contemplated to be now supplied for the summit, and appropriated to immediate use; while, by the application of additional power, the supply of this indispensable article can be indefinitely increased. It is proper here to notice more particularly the very important advantages to be derived from the new route on the western section, which by the extension of the navigable feeder on the Swatara, to a distance of twelve or fourteen miles, will carry the works into the heart of the coal region, and give a means of access to the canal from an extensive country on the Susquehanna, below Sunbury. These advantages, as they relate to one great object of future commerce, namely, anthracite, and perhaps bituminous coal, the board will give, in the language of a correspondent of Silliman's last number of the Journal of Sciences. Our scientific and liberal fellow citizen, William Maclure, Esq. in a late letter to the editor of that journal, says on that subject, "We made an interesting tour through the anthracite region of this state, and found an immense mass of combustible matter, more favourably situated for being extracted from the earth, and with less labour, than any coal I have yet seen. The coal beds are situated in hills from three hundred to six hundred feet above the level of the rivers and canals. The beds or strata of coal, being inclined at a pretty high angle from the horizon, may all be wrought by subterranean canals, going from the rivers made navigable by dams. The hills which at present, by the carriage on the surface, are the cause of much expense, may, by canals following the beds, be

worked every where above the water level, at little or no expense, and at the same time the whole field will be effectually drained; an advantage that few or no coal fields in Europe enjoy, and from which the Duke of Bridgewater has derived great profits. This immense formation of anthracite will render this state the most productive in the Union; for as soon as they can contrive a good mode of smelting iron ore with the anthracite, this will become one of the greatest iron countries on the globe, because, having so much fine magnetic iron ore, and the natural state of the combustible rendering it capable of producing a very strong heat without any preparation of coaking or adulterating with any mixture injurious to the making of iron.—Those circumstances constitute so many advantages as are scarcely to be met with in any locality as yet known.”

The examinations which have been made under the authority of the commonwealth, show that other routes for connecting the Schuylkill and Susquehanna, heretofore deemed by some persons likely to be preferable to that of the Union Canal, are liable to the same objections that have been urged against it, but to a much greater degree. Indeed there seems to be the best reason for believing, that upon the route finally selected by this company, there is less lime stone, less lockage, and a more abundant supply of water than can be found upon any other.

The board are well aware of the doubts that existed in the minds of many persons as to the rendering a canal sufficiently firm in a lime stone country. But certainly, with perseverance and diligence, this obstacle may be overcome; and when it is considered that the objection,

if valid, must preclude the possibility of making any canal from the Schuylkill to the Susquehanna, because *every route* must somewhere cross the lime stone region—the means of conquering the difficulty, and not its extent, ought alone to be kept in view.

Every difficulty of this or any other kind, the board flatter themselves, has been overcome, and the confidence of the public in our complete success, is now so fully established, that the Union Canal is considered by them as almost a finished work, and that the great project, so long thought impracticable, of uniting the waters of the Susquehanna and Delaware, is now about being realized. At the convention held at Harrisburg last August, for purposes of internal improvement, and especially the promotion of a water route from Philadelphia to Pittsburg, and Lake Erie, the starting point in all discussions upon the subject, was the west end of the Union Canal; taking it always for granted that every obstacle to the completion of that work had vanished; and the board, trusting that these expectations will not be disappointed, entertain a well founded hope that the trade of the Susquehanna will pass to the Delaware, through the Union Canal, at furthest, early in the year 1827.

The stockholders will find annexed to this report, the document already alluded to, together with the report of the committee who lately visited the works, and a statement of the lottery funds, amounting to 133,601 dols. 76 cts., also the treasurer's account, showing the sum of 8406 dols. 24 cts. to be the balance of cash in his hands on the first instant.

All which is respectfully submitted, by

SAMUEL MIFFLIN, *President.*

Union Canal Office, November 15, 1825.

STATEMENT

OF THE

LOTTERY FUNDS

OF THE

UNION CANAL COMPANY OF PENNSYLVANIA.

Old Lottery Fund, pledged to the subscribers of Loan,
for the payment of interest, and in part for the extin-
guishment of the principal, after having satisfied the
interest on Loan, up to the 16th October last,

\$ 86,805 71

Proceeds of Lotteries, authorized for the
payment of interest to subscribers of
New Stock, after having satisfied in-
terest up to the 16th October last,

amount to - - - - - 46,796 05

Total - - - - - \$ 133,601 76

THOMAS P. ROBERTS,

Treasurer.

PHILADELPHIA, NOVEMBER 15, 1825.

DR.

Union Canal Company in account with

Thomas P. Roberts, Treasurer.

CR.

		Dolls.	Cts.		Dolls.	Cts.
1824.	To cash paid by order of the Board of Managers, from November 16, 1824, to February 1, 1825, - - - -	25,235	53	1824.	By balance, as per settlement of the Committee of Accounts, November 16, 1824, - - - - -	7,962 04
1825.	To cash paid by order of ditto ditto, from February 1, to May 1, - - -	123,738	51		By cash received, from November 16, 1824, to February 1, 1825, - - -	18,595 90
	To cash paid by order of ditto ditto, from May 1, to August 1, - - -	77,117	71	1825.	By cash received, from February 1, to May 1, - - - - -	130,330 09
	To cash paid by order of ditto ditto, from August 1, to November 1, -	130,775	74		By cash received, from May 1, to August 1, - - - - -	71,440 33
					By cash received, from August 1, to November 1, - - - - -	136,945 37
	Balance - - - - -	8,406	24			- - -
		365,273	73			365,273 73
					By balance, November 1, - - -	8,406 24

E. E.

THOMAS P. ROBERTS, Treasurer.

Philadelphia, Nov. 1, 1825.

Examined, and found correct.

 WILLIAM BOYD, } Committee of Accounts.
 JACOB GRATZ, }

PROPOSALS FOR UNION CANAL LOAN.

In pursuance of a resolve of the board of managers of the Union Canal Company of Pennsylvania, sealed proposals will be received at this office, until the 7th day of April next inclusive, for loaning to the company two hundred thousand dollars, part of five hundred and fifty thousand dollars, (which will be the amount of loan required to complete the works) at an interest of six per cent. per annum, payable quarterly, the principal to be redeemable at the option of the company, at any time after the 1st day of January, 1836, and the holders of the loan to be entitled to convert one half the amount thereof into the capital stock of the company, within one year after notice shall be given of the completion of the works. The board of managers reserve the right of accepting the most favourable offers, for any part of the amount, without regard to any other offers, or without being obliged to accept offers for the whole amount, it being understood that all offers which are accepted shall be placed on the footing of the lowest offer accepted.

But if proposals equally favourable, are offered for a greater amount than is required, a proportional distribution will be made. On all proposals accepted, ten per cent. together with the premium, will be required to be paid, and the balance at any time within six months from the time of subscribing, at the option of the subscribers.

The board of managers also reserve the right to borrow the remaining part of the whole amount of loan above mentioned, at such time or times, and upon such terms as they may think fit, upon the same security, placing the whole amount in respect of the security, upon an equal footing.

The proposed loan being in anticipation of certain resources of the company, which will be pledged as a security, persons inclined to make proposals, are invited to call at the office and examine the specification of the same.

By order of the Board of Managers.

THOMAS P. ROBERTS, *Treasurer.*

Union Canal Office,
Philadelphia, March 24, 1825. }

SPECIFICATION

Of the Funds and Resources, pledged by the President and Managers of the Union Canal Company of Pennsylvania, for the payment of the interest, and extinguishment of the principal, of the loan of 550,000 dollars, which they propose to make to complete their works; 200,000 dollars of which loan, it is intended to obtain at this time.

- I. The accumulation of the lotteries not already pledged for the payment of interest on the subscription of 1821, which will amount, on the 16th of April next, to - - - - - \$ 86,703 03

This accumulation consists of \$ 46,734 88
invested in United States'
6 per cent. stock.

And in cash, - - - - - 39,968 15

Total, - - - - - \$ 86,703 03

- II. The right to raise ultimately by lottery the residue of the \$ 340,000, originally granted by the Legislature; whereof, \$ 136,000 have been already raised, leaving to be raised, - - - - - 204,000 00

- III. The works of the Company already accomplished, at the cost of about 400,000 00

Total, - - - - - \$ 690,703 03

- IV. The works as they proceed hereafter, and the tolls and income arising therefrom,

By order.

THOMAS P. ROBERTS, *Treasurer.*

*Union Canal Office,
Philadelphia, March 24, 1825. }*

TABLE,

SHOWING

THE INCOME FROM THE UNION CANAL,

*At two cents per ton per mile, for 74 miles of distance, and
240 days of navigation, with boats of 20 tons each.*

Number of Boats.	Tons per Day.	Receipts per Day.	Tons per annum.	Receipts per annum.
5	100	\$ 148 00	24,000	\$ 35,520
6	120	177 60	28,800	42,624
7	140	207 20	33,600	49,728
8	160	236 80	38,400	56,832
9	180	266 40	43,200	63,936
10	200	296 00	48,000	71,040
11	220	325 60	52,800	78,144
12	240	355 20	57,600	85,248
13	260	384 80	62,400	92,352
14	280	414 40	67,200	99,456
15	300	444 00	72,000	106,560
16	320	473 60	76,800	113,664
17	340	503 20	81,600	120,768
18	360	532 80	86,400	127,872
19	380	562 40	91,200	134,976
20	400	592 00	96,000	142,080
30	600	888 00	144,000	213,120
40	800	1,184 00	192,000	284,160
50	1000	1,480 00	240,000	355,200
60	1200	1,776 00	288,000	426,240
70	1400	2,072 00	336,000	497,280
80	1600	2,368 00	384,000	568,320
90	1800	2,664 00	432,000	639,360
100	2000	2,960 00	480,000	710,400

By the last Report of the New-York Canal Commissioners, it appears, that during the year 1824, no less than 157,446 tons were passed upon the canals under their charge, which produced tolls to the amount of \$294,546 62.

In the same Report, it is remarked, that "the number of boats which have passed on the canal below the junction, has been equal to an average of forty per day, through the season; between the junction and Utica, on the Erie canal, twenty-four per day; and between Utica and Rochester, sixteen per day, including packet boats, of which four run daily."

"It is ascertained, that a boat can be passed through a lock in five minutes; and that, allowing for all contingencies, one can be passed every eight minutes during the twenty-four hours, making 180 each day.

New-York Canals, Vol. II. p. 259-61.

REPORT

OF

A COMMITTEE WHO LATELY VISITED THE WORKS.

The committee appointed for the purpose of viewing the works erected by the company, report, that they proceeded on the 5th instant to Reading, where, accompanied by Mr. White, they viewed the works from below Reading, to the west end of the summit level, and found about forty miles entirely completed upon this part of the line, including the necessary towing paths and culverts, and the requisite number of bridges, and also fifty-two locks, all of which are constructed in a style which combines beauty, solidity and economy.

The board are aware that for the purpose of rendering more perfect the great work intrusted to their management, it has been determined to carry the canal into Lewis's dam, which will enable the boats to enter the Girard canal on the west side of the Schuylkill, without crossing and recrossing the river. This extension of the work so recently determined upon, and the wisdom of which appears the more manifest to the committee since their personal inspection of the ground, will prevent the full completion within the present year of the great eastern section, which, including the summit level, is by far the most difficult and expensive portion of the entire work. All however that remains to render it per-

fect, is, the completion of about four miles of canal, and of the aqueduct near the mouth of the Tulpehocken, together with the construction of the dam in the Schuylkill, and of three additional locks. These parts of the work, the committee confidently believe will be finished in the course of the ensuing summer. The committee, after inspecting the eastern section, extended their examination to the western section, in company with the President, and Messrs. White and Guilford. They found every part, to within one mile of the Susquehanna, under contract, to be completed within the ensuing year. About ten miles of excavation and ten locks, together with two thirds of the navigable feeder, and a considerable portion of tunnel, are actually completed, constituting altogether the accomplishment of about one third of the entire western section. The extension of the canal to the Susquehanna, and the construction of the navigable feeder, which may be made to penetrate nearly to the heart of an exhaustless mine of the most valuable stone coal, affords an almost certain prospect, that at every period of the year a trade will seek the Union Canal, equal to that upon any other canal in the world, and that a moderate toll might produce an annual sum, not less than half a million of dollars. But under such circumstances, a supply of water would be needed, far beyond the quantity requisite for a mere trade necessary to remunerate the stockholders; and the committee feel the highest pleasure in expressing their full conviction, that from the judicious location of the western section, for which the people of Pennsylvania are indebted to the genius of Canvass White, a mechanical power can be procured

at a trifling expense, which, at a future period, (not far distant,) whenever an augmentation of trade takes place, will enable the company to raise the whole of the river Swatara, including the branch which is called the Little Swatara, into the summit level of the canal. In the meantime, the expedients already adopted, and which bid fair to secure the entire completion of the work within twelve months, will demonstrate to the people of our state, the superiority of canals over other methods of conveyance, and furnish an internal communication between the two greatest rivers in the commonwealth, which will be productive of unspeakable blessings to all classes of the community.

The board are already apprized that the progress of the work has been somewhat retarded, and the feelings of the officers upon the line disturbed, by wanton outrages upon some parts of the work. Some more efficacious remedy for this evil, which manifestly impedes the interest, and degrades the honour of the state, may be expected from the wisdom of the legislature; and the committee recommend a memorial to be forwarded to Harrisburg in the first week of the approaching session. The period, however, must soon arrive, when popular opinion in the counties where the canal is located, will gain strength in favour of the work, and frown into impotence, the efforts of prejudice and ignorance.

(Signed,)

WILLIAM LEHMAN. }
WILLIAM W. FISHER. } Committee.

November 14, 1825.

ANNUAL REPORT

5

OF THE

PRESIDENT AND MANAGERS

OF

THE UNION CANAL COMPANY

OF

PENNSYLVANIA,

TO

THE STOCKHOLDERS.

November 16, 1824.

PHILADELPHIA:

PRINTED BY LYDIA R. BAILEY,

NO. 10, NORTH ALLEY.

1824.

AT the Annual Meeting of the Stockholders of the Union Canal Company of Pennsylvania, held at their Office, No. 6 Carpenter's Court, on the 16th of November, 1824, the following Report was presented, read, and accepted; and is now printed in pursuance of the provisions of the Charter.

At the same Meeting, the following Gentlemen were chosen to conduct the affairs of the Company, for the ensuing year.

PRESIDENT.

SAMUEL MIFFLIN.

MANAGERS.

SAMUEL BRECK,
WILLIAM LEHMAN,
GEORGE VAUX,
WILLIAM BOYD,
WILLIAM READ,
CHARLES GRAFF,

JOHN C. STOCKER,
WILLIAM W. FISHER,
JACOB GRATZ,
FRANCIS G. SMITH,
PETER HAHN,
WILLIAM Y. BIRCH.

REPORT.

THE President and Managers of the UNION CANAL COMPANY OF PENNSYLVANIA, submit to the stockholders the following report.

At the date of the last annual report, it will be remembered, that under the guidance of Mr. White, the engineer-in-chief, a large proportion of the excavation and embankment, from the summit-level to the Schuylkill, had been placed under contract, and was then in a course of execution. The very favourable season during the winter, having enabled the contractors to continue upon the work almost uninterruptedly, these parts of it have proceeded with extraordinary rapidity.

From the summit-level eastward, the excavation of the canal, made thirty years ago, extends four miles; and from its termination to the Schuylkill, the line of canal, as now laid out, extends thirty miles and a few perches. The work commenced may therefore be divided into the *summit-level*, of about two miles and three quarters; and the *eastern descent*, from the summit to the Schuylkill, of about thirty-four miles: making the whole distance, from the west end of the summit-level near Lebanon to the Schuylkill, about thirty-six miles and three quarters.

In order to give a more distinct view of the state of the work, the above divisions will be spoken of separately.

The *summit-level* is entirely excavated, being at the bottom 25 feet in breadth, at the water surface 40 feet, and calculated for five feet depth of water. About 160 perches of this part of the canal, have been cut to the depth of ten feet, exclusive of the old excavation, through a solid rock; and a considerable quantity of the same obstinate material, was found in its other parts. The great body of this rock being at the highest part of the ridge dividing the waters flowing east from those flowing west, and where the old excavation had been sunk from 12 to 15 feet, the blasting and removal has proved an arduous and expensive operation; and the spoil-banks formed by it are of great extent. Some of the stone has been used to wall the sides of the canal, to prevent their washing; and some has in like manner been used to face the spoil-banks, at the deep cutting, in order to preserve them from being carried into the canal and towing-path, by heavy rains. This walling has been done in a substantial and durable manner, and besides its utility in the particulars above-mentioned, has disposed of a considerable quantity of material, which must otherwise have encumbered more extensively, the neighbouring grounds. On this part of the work there remains but little to be done, excepting the removal of some loose stone, much of which is intended for the western locks, and the finishing of some additional walling and puddling, to render it entirely fit for the reception of water. The lining with earth, and puddling, have in general been some time completed; and, from the care taken, it is confidently expected that it has been rendered water-tight throughout.

Connected with the summit-level are several feeders, and two reservoirs. The western reservoir, at Light's Brook, contains a reserve of about four hundred locks

full of water, and, with its feeder, was finished near the close of last year : that at Kentner's, on the head of Tulpehocken, has been but recently undertaken, and is in rapid progress. It will contain a reserve of about four thousand locks full, and, with its feeder, of about one mile and three quarters in length, will be completed by the 1st of January next.

Considering the arduous nature of the work upon the summit, and the many embarrassments necessarily attending it, the board feel particularly happy in being enabled to announce to you, its near approach to a final completion.

The *eastern descent*, from the summit to the Schuylkill, measures thirty-four miles and a few perches. Of this distance, thirty-three miles have been placed under contract, extending to Boyer's mill, within one mile of the mouth of Tulpehocken ; and, as regards excavation and embankment, thirty miles may be said to be entirely completed. The parts remaining unfinished are six sections of half a mile each, all of which are to be completed by the 1st of May next. The whole of this line appears to have been located in a most judicious manner ; and, notwithstanding many parts of the route have presented difficulties of great magnitude, its execution is such as to meet the fullest approbation of the board, and has established their confidence in the skill of their engineer and his assistants, upon the firmest basis.

This part of the canal is 24 feet wide at bottom, and 36 feet at the water surface, and is calculated for four feet depth of water. The towing-path, which is altogether upon the southern side, is ten feet wide, and is raised eighteen inches above the water surface.

The fall to be overcome upon this descent will require fifty-two locks : of these, fifty have been contracted for,

and twenty-four are completed, with the exception of the coping and the gates, in a most substantial and workman-like manner. The coping of Nos. 21, 25, and 26, is finished, and the contractors are engaged in getting out the coping for the remainder; and a large number of the gates also are finished. The lifts of the locks necessarily vary according to situation, but are in general five to six feet; some, however, do not exceed four feet and a half, and a few are seven and eight feet. The chambers are eight feet and a half in width, and seventy-five feet long, and are faced with dressed sand-stone, in large masses, most substantially laid in hydraulic cement. The walls have a curve outwards, to resist the pressure of the banking, obtained by a batter in each wall, of two-thirds of an inch to every foot of rise, at the middle of the lock, and gradually lessening and running into the perpendicular at each end. This form is believed to contribute much to the strength of the walls, being in conformity to the most approved models.

The lock No. 21, at the turnpike above Womelsdorf, combines in a high degree beauty and solidity with economy of construction, and may be referred to as a pattern reflecting the highest credit upon Messrs. Groves, Byrnes, and Provest, the builders.

Some of the bridges are completed, and nearly all of them are placed under contract, to be finished during the ensuing winter. This part of the work has in general been undertaken by the lock-builders, to whom it will be advantageous, by affording employment at a season when they might otherwise be unoccupied; the laying of the masonry of the locks having been suspended from the middle of October, to avoid injury by frost.

Many of the culverts are finished, and the residue are to be completed by contract early next year; and the

contractors are busily engaged upon the aqueduct over Plumb creek, four miles from the Schuylkill. The waste-wiers are not yet made, but the timber necessary for them is to be provided during the ensuing winter, and they will be erected early in the next season. The minute details of the work it is unnecessary to state ; but it may be remarked, that they are in such a train as to ensure their completion long before the more important parts can be in readiness for use.

In the course of the excavation, at a point within a mile of the town of Womelsdorf, a discovery has been made of hydraulic lime, the principal ingredient of the hydraulic cement, which hardens equally well under water and in the air, and which, when once *set*, is not penetrable by moisture, or liable to be injured by frost or change of temperature. This material has already been used in the construction of parts of the locks, and promises to be equal to that obtained from New-York or foreign countries ; and, among the many advantages which the canal is destined to confer upon Pennsylvania, the discovery of this new mineral treasure will not be considered as the least in interest. It is but just to add, that the merit of this important discovery is principally due to Mr. Simeon Guilford, one of the assistant engineers, who has, from the first of his entering into the service of the company, been indefatigable in his researches and experiments in relation to this subject.

It will be remarked, that the dimensions of the locks given in this report, differ from those mentioned in the report of November 19, 1822. On this subject, the board desire that the reasons which have governed them should be fully known to the stockholders, in order that any erroneous views which have obtained circulation may be corrected.

The navigation originally contemplated upon this line, was for boats to carry from seven to ten tons each. Mr. Weston afterwards altered it, to accommodate boats bearing 18 tons; and the dimensions now adopted will pass a boat carrying from 20 to 25 tons, being what may be termed the best average load for a single horse, to be moved at the usual canal rate, of two and a half miles, to three miles, per hour. A navigation of this kind is believed to be the most convenient and profitable; as respects all parties concerned in transportation; and the proportion between the width of the locks and the canal, is conformed to the most approved principles. It was decidedly recommended by Mr. White, the engineer of the company, whose opinion was sanctioned in the fullest manner by that of Benjamin Wright, Esq., chief engineer of the Erie Canal, and now holding the same station upon the Chesapeake and Delaware Canal; and by the late Mr. Thomas Oakes, engineer of the Schuylkill Navigation Company. Guided by the judgment of men whose talents, skill, and experience, are so well known and acknowledged, the board feel every confidence that their decision will be found correct, when tested by experience: in fact, to have rejected advice from such sources, would have evinced a degree of presumption altogether unwarrantable on the part of the members of this board, who make no claim to knowledge or experience in the construction of canals. It may be further remarked, that two boats adapted for this canal can pass at the same time through the Schuylkill locks, an advantage of much importance in a press of trade: this consideration had also its weight in the decision. And if but four boats of twenty-five tons should pass daily each way upon this canal, for eight months in the year, and the toll be rated at two cents per ton per mile, the product

would be more than twelve per cent. upon a capital of half a million of dollars. Were it needful to resort to examples, it might be safely asserted that some of the most useful and profitable canals abroad have locks of smaller dimensions than those adopted by this board; and in our own country, the great canal from the Potomac to the Ohio, is projected, by the persons who surveyed the route, for boats carrying twenty-five tons. It is also emphatically remarked, in the report upon the canal through New-Jersey, where a small navigation is recommended, that "experience has gradually led to a reduction in the size of canals, and of the vessels which navigate them." The late Mr. Fulton, who was a warm friend to canals, refers particularly to the advantages of a twenty-five ton navigation, in his letter to the Secretary of the Treasury; and although the size of the locks upon the Erie Canal may seem to be an example opposed to these views, it is a fact derived from unquestionable authority, that they were constructed of their actual width in order to pass two boats at the same time, which of course would require the boats to be but seven feet wide, and would allow of a tonnage very similar to the locks upon this canal.

The board could not but be fully aware of an opinion which has been entertained by some persons friendly to inland navigation, that this canal should have been made of such dimensions as to receive and pass without interruption, not only the boats, but the arks and rafts, which usually descend the Susquehanna; and their attention was, in the outset, particularly turned to that object, as the most natural and obvious plan. Subsequent inquiry has convinced them, that such a navigation would have been not only most expensive, but likely to eventuate in disappointment; for it is a conceded point with engineers,

that arks and rafts are unfit for use in canals. As cases in point, the canals of New-York may be cited, and especially the northern one, which was particularly constructed for the lumber trade. The delays in passing, and the injuries done to the banks, locks, bridges, &c., by the use of these ponderous and unmanageable machines, which are calculated only to float with a current, were so extensive as to induce the laying of a toll which operates nearly as a prohibition; and the lumber there, as has always been the case upon the Erie Canal, is now transported almost wholly in boats. Indeed the facility of moving a narrow boat through the water, is so much greater than a wide one, that even looking to the Susquehanna itself, when by means of this canal its ascending trade shall become important, as well as the descending, there can be but little doubt of its eventual conformity to the principles here adopted.

Under the present circumstances of this interesting state improvement, the board feel a high degree of pleasure in adopting as their own the opinion of a committee who recently examined the line along its whole extent: “ That, after mature reflection, they are fully satisfied, “ that a complete canal navigation through the fertile and “ populous country between Reading and Lebanon, will “ be completed before the lapse of the next year; and “ as this section will be more than half as regards distance, and about two-thirds as regards difficulty and “ expense, of the magnificent work which is to join the “ Susquehanna with the Schuylkill, they may congratulate the stockholders, the city, and the whole state, “ upon the prospect of the entire completion, within two “ or three years at furthest, of the UNION CANAL, affording a highway upon which a boat will carry twenty-five “ tons, with the aid of only one man, one boy, and one

“ horse ; a burden which, upon our most improved turn-
 “ pikes, now requires at least ten men and forty horses.”

The board, duly appreciating the importance of continuing in the service of the company, persons who are experienced and skilful, are satisfied that it will essentially promote the interests of the stockholders, to proceed with the western descent of the canal at as early a day as possible, more especially as it is apparent that it can be prosecuted without any material increase of the number of engineers and officers, and with little or perhaps no augmentation of many other incidental expenses now necessarily incurred.

With a view to the prosecution of this important branch of the concern, two of the assistant engineers have been engaged, at different times during the season, in various preliminary examinations ; and, the health of Mr. White having enabled him to resume his station, it is expected that this line of canal will be finally located, before the setting in of the winter. It is also expected, that before the end of the year, time will be afforded for a more particular examination of the ground between the mouth of Swatara and the mouth of Paxton creek, and thence back of Harrisburg to, or above Hunter's Falls, so as to decide whether the canal might not be extended by that course towards the west—an object of great importance to the state, and particularly interesting to the seat of government.

More than thirty-five years ago, an association was formed in this state, for the purpose of promoting canal navigation and internal improvements, which numbered among its members many of the most enlightened and patriotic citizens of that period. The prominent measure originated by them, and strenuously urged upon the attention of the legislature, was a water communi-

cation from the metropolis of the state to the Ohio at Pittsburg, and the Lakes, through the Schuylkill—the line of the Union Canal—the Juniata—the Conemaugh and French creek. The discouragements which attended the first attempts are but too well known, and their influence has been allowed to be too long felt. The completion of the Schuylkill works, the first link of the great chain, is now happily accomplished: the undertaking in which you are engaged, and which is to form the second, is in a most prosperous train; and it is a subject of pleasing contemplation, that the legislature have turned their attention to a serious preparation for a further extension of the great work.

In agricultural products, Pennsylvania is amongst the favoured spots of the earth; in mineral wealth, she is equally favoured: but the former must labour under many disadvantages, and the latter remain useless in the bowels of her hills and mountains, until both can find a cheap and ready conveyance to a market. Such a conveyance is to be obtained through the medium of canals alone; and the policy which shall promote them, must be enlightened and patriotic, and greatly advance the prosperity of the Commonwealth.

In relation to the fund arising from the Lotteries, a statement is annexed, showing the amount of \$131,174 65. to the credit of that account, after providing for all the interest hitherto accrued.

The accompanying account of the Treasurer shows the sum of \$7962 04 cts. as the balance of cash in his hands at this time.

Submitted by order of the Board of Managers.

SAMUEL MIFFLIN,
President.

STATEMENT
OF THE
LOTTERY FUND

OF THE

UNION CANAL COMPANY OF PENNSYLVANIA.

The amount of the Lottery Fund received from the
Old Company, was, on the
21st of May, 1821, - \$ 70,526 94

Which has been increased, by
interest, and the investment
thereof, - - - - - 13,423 96
83,950 90

There has been received from the opera-
tions of the Lottery, since that period,
after deducting the interest due the
Stockholders, up to the 16th of October
last, - - - - - 47,223 75
131,174 65

Of this amount, there is, bear-
ing an interest of 6 per ct. 125,445 12
And there remains to be in-
vested - - - - - 5,729 53
131,174 65

THOMAS P. ROBERTS,
Treasurer.

PHILADELPHIA, NOVEMBER 16, 1824.

DR.

Union Canal Company in account with *Thomas P. Roberts, Treasurer.*

CR.

		Dolls.	Cts.	1823.		Dolls.	Cts.
1823.	To cash paid by order of the Board of Managers, from November 1, 1823, to February 1, 1824, - - - -	36,071	36		By balance, as per settlement of the Committee of Accounts, Nov. 1, -	18,992	60
1824.	To cash paid by order of ditto ditto, from February 1 to May 1, - - - -	57,338	01	1824.	By cash received, from November 1, 1823, to February 1, 1824, - - -	29,784	57
	To cash paid by order of ditto ditto, from May 1 to August 1, - - - -	88,582	56		By cash received, from February 1 to May 1, - - - - -	89,763	86
	To cash paid by order of ditto ditto, from August 1 to November 16, - - - -	79,407	86		By cash received, from May 1 to August 1, - - - - -	46,725	09
	Balance - - - - -	7,962	04		By cash received, from August 1 to November 16, - - - - -	84,095	71
		269,361	83			269,361	83
					By balance - - - - -	7,962	04

In presenting this account, the Treasurer has the satisfaction to inform the Board of Managers, that the Stockholders have attended with regularity to the payment of the instalments which have been called for; the whole thereof being paid, excepting the last instalment due from the Commonwealth, payment of which has not yet been requested.

PHILADELPHIA, NOVEMBER 16, 1824.

THOMAS P. ROBERTS, Treasurer.*Examined, compared with the entries, and found correct.*

WILLIAM BOYD,
JOHN CLEMENTS STOCKER, } Committee of Accounts.

